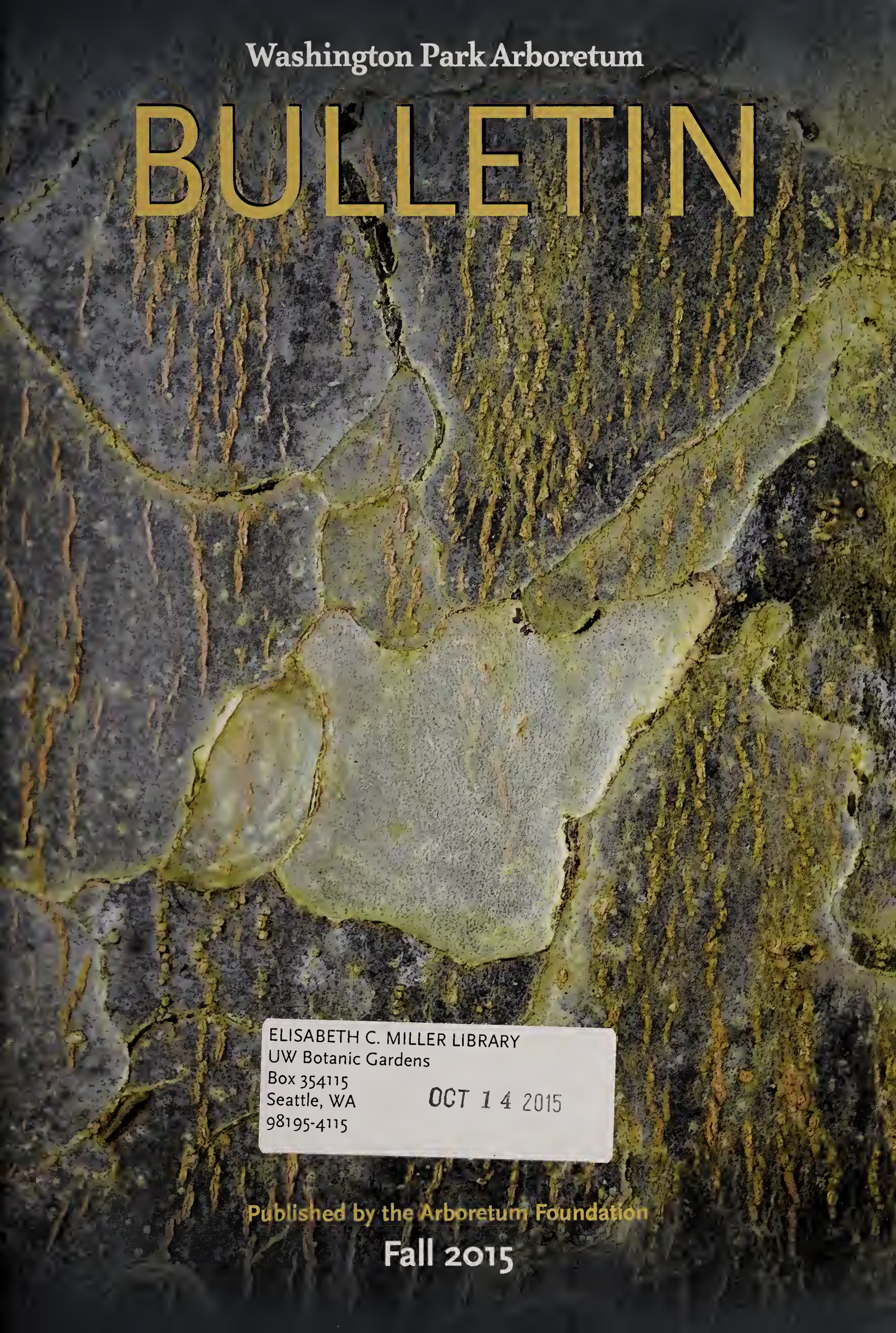
Washington Park Arboretum

BULLETIN



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Washington Park Arboretum

The Arboretum is a 230-acre dynamic garden of trees and shrubs, displaying internationally renowned collections of oaks, conifers, camellias, Japanese and other maples, hollies and a profusion of woody plants from the Pacific Northwest and around the world. Aesthetic enjoyment gracefully co-exists with science in this spectacular urban green space on the shores of Lake Washington. Visitors come to learn, explore, relax or reflect in Seattle's largest public garden.

The Washington Park Arboretum is managed cooperatively by the University of Washington Botanic Gardens and Seattle Parks and Recreation; the Arboretum Foundation is its major support organization.

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The Arboretum Foundation's mission is to create and strengthen an engaged community of donors, volunteers and advocates who will promote, protect and enhance the Washington Park Arboretum for current and future generations.

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ABOVE: Fall color on a shagbark hickory, *Carya ovata*, on Azalea Way. (Photo by Niall Dunne)

ON THE COVER: The colorful, peeling bark of a Persian ironwood, *Parrotia persica*, at the Pacific Connections Garden circle turnaround. See page 10. (Photo by Niall Dunne)

Joy!

Photo by Bill Stafford

What a special time in my life! On August 15, Biff and I celebrated our marriage at the Seattle Chinese Garden, surrounded by family and friends. We blended my love of Chinese culture and his love of all things New Orleans into an Asian/Cajun-fusion wedding. We had a New Orleans jazz band play as we wended our way through the Chinese Garden doing a second-line parade, wearing our Mardi Gras beads and carrying Chinese parasols. How many brides can have this much fun accompanied by a troupe of happy grandchildren? How many are lucky enough to be married in an amazing public garden that they helped to make happen? It was simply a magical day.

Afterwards we went to Barbados and learned about my mother's Bajan ancestors, who lived there in colonial times. Then we sailed, and swam, and explored the island.

Now, we are back to reality. Biff is in New Orleans, heading LSU's pain program and doing research. I am in Seattle, busy working on a series of exciting initiatives. Michele Norman, our new events manager, and I are working with the staff to revamp the way the Opening Night Party works, and to create a new summer party to be held next year in the Arboretum. We are working closely with our partners at UW Botanic Gardens on plans for a new environmental education building in the Arboretum, and with our partners at Seattle Parks, on some great new ideas for the Japanese Garden. It is a very exciting time to be working here.

For the foreseeable future, Biff and I will each continue to do the important work we have been doing, each in the very different cities that we love. With the help of our nightly Skype call and Alaska Airlines non-stops, we will make it all work. Thank you all for your love and support.

Cheers,

Paige Miller

Paige Miller, Executive Director,
Arboretum Foundation

Rare Plant Seeds Donated to Time Capsule

By Karl Wirsing

For the 125th anniversary of Washington's statehood, the UW Botanic Gardens donated the seeds of five rare plant species—all native to Washington—from its Miller Seed Vault at the Center for Urban Horticulture for burial in the Washington Centennial Time Capsule.

The time capsule is located in the Washington State Capitol in Olympia. It's a large green safe with 16 individual capsules, one of which will be filled every 25 years until the state's 500th birthday in 2389. The 2014 capsule was loaded this past January and then resealed during a ceremony on February 22, George Washington's birthday.

ABOVE: Barrett's beardtongue grows on basalt cliffs in the Columbia River Gorge and is a favorite garden plant of the region's residents. (Photo by Betty Swift)

Back in November 2014, the Keepers of the Capsule (www.capsulekeepers.org), a volunteer group that helps steward the capsule project, reached out to the UW Botanic Gardens to inquire about a possible donation of native seeds. Professor and Director Sarah Reichard and Wendy Gibble, who manages the Washington Rare Plant Care and Conservation program, decided that an appropriate contribution would include bundles of seeds that represent plants from different habitats across the state. They were careful to select seeds that are rare and endemic to Washington, but that are not in short supply in the Miller Seed Vault (just in case the seeds don't last 375 years in an airtight aluminum foil package!).

The five selections include Thompson's clover (*Trifolium thompsonii*) from the shrub-steppe of Central Washington; Barrett's beardtongue (*Penstemon barrettiae*) from the basalt cliffs of the Columbia River Gorge; Washington polemonium (*Polemonium pectinatum*) from the channel scablands of Eastern Washington; Victoria's paintbrush (*Castilleja victoriae*) from a tiny island in the San Juans; and Whited's milk-vetch (*Astragalus sinuatus*) from a 10-square-mile region south of Wenatchee, Washington. Each bundle included 20 seeds and specific instructions about propagation, as well as general information about the plant's characteristics and where the seeds were collected.

Will these seeds be alive and well in 2389? "Hard to say," says Gibble, "but it's a shame we won't be there to see for ourselves!"

Reprinted with permission from "Offshoots," the news blog of the UW's School of Environmental and Forest Sciences.

Karl Wirsing is the Director of Communications at the UW's School of Environmental and Forest Sciences and the editor of the "Offshoots" blog.

Jennifer Youngman is the Rare Care program coordinator at UW Botanic Gardens.

ABOVE: Whited's milk-vetch is known only from a 10-square-mile region near Wenatchee, where severe wildfires and encroaching urban development threaten its persistence. (Photo by Wendy Gibble)

LEFT: Washington polemonium is found along creek banks in the channel scablands of eastern Washington. Its populations are threatened by invasive species. (Photo by Wendy Gibble)

RIGHT: Thompson's clover, a unique clover found in the central part of Washington, is easy to spot in May among the perennial bunchgrasses and sagebrush. (Photo by Connie McCauley)

Rare Care Receives Forest Service Award

By Jennifer Youngman

In June, the U.S. Forest Service awarded Washington Rare Plant Care and Conservation—and the hundreds of trained volunteers from all parts of the state who, in the past 14 years, have participated in this rare plant-monitoring citizen science project—its Regional Volunteer Award for Citizen Stewardship & Partnerships.

When Lauri Malmquist, district botanist with the Okanogan-Wenatchee National Forest, nominated Rare Care, she wrote, "As staffing and funding to the Botany/Ecology Program on the Okanogan-Wenatchee NF continue to decline, [Rare Care's] rare plant monitoring program has played a vital role in continuing the monitoring necessary to provide critically needed information on the status of Washington State's rare plant species. . . . Many rare plant populations have not been visited in a decade or more due to diminishing Federal funding and capacity. The scarcity of updated information on these plants puts them at risk of extirpation as a result of development, invasive species competition and other threats. All USFS Forests in Washington State, have benefitted from this volunteer effort. . ."

Toward the end of each year, Rare Care consults with federal, state, and other public land managers across the state to develop a list of the most urgent monitoring priorities for the coming year. Then each volunteer chooses an assignment and sets off at the proper season in search of one of Washington's 3500 rare plant populations. Finally, Rare Care compiles their data, maps and sketches them, and distributes them to the appropriate land managers and the Washington Natural Heritage Program (WNHP). Land managers use the data in making land-use decisions. The WNHP maintains the state's rare plant database and determines the status of each species.

This year, Rare Care volunteers have been searching in the Okanogan-Wenatchee National Forest for the threatened Thompson's clover (*Trifolium thompsonii*) and the sensitive obscure paintbrush (*Castilleja cryptantha*), longsepal globemallow (*Iliamna longisepala*), and Seely's silene (*Silene seelyi*), among other species. To learn more about Rare Care or help support the program, visit http://depts.washington.edu/uwbg/rarecare/index.shtml or call (206) 616-0780.

Hidden Treasures of the Arboretum

Dawn Redwood

By Christina Pfeiffer

In 1946, a young Chinese botanist named Chi-Ju Hsueh made a difficult 72-mile journey alone and on foot to a remote valley in Sichuan province. His assignment was to collect samples from an unusual tree botanists had found several years earlier, but still could not identify. With these samples, scientists landed on what has been

described as one of the greatest botanical finds of the 20th century—live specimens of a species that had previously been seen only in fossil records. The tree would come to be known as dawn redwood, *Metasequoia glyptostroboides*.

The story of the tree's discovery is a compelling one, made even more so by the fact that it took place during a period of war and austerity. In 1941, a Chinese forester named Toh Kan came across a huge, deciduous conifer by the roadside near the village of Muo-tao-chi, in Sìchuan Province. He knew he had discovered something unusual but was unable to collect adequate samples due to the lateness of the season. Two years later, a forest researcher called Chan Wang—at the request of a colleague of Kan's—collected material from the tree but misidentified it as a type of swamp cypress. It took two more years for scientists to realize they were looking at a new species, possibly a new genus.

In 1946, Wan-Chun Cheng, a professor of forestry at the National Central University in Nanjing, sent his graduate student, Chi-Ju Hsueh, to collect additional material from the tree, following Wang's directions. Cheng sent a sample to Hsen-Hsu Hu, director of the Fan Memorial Institute of Biology in Beijing. Hu determined the sample to be a match with the fossil records of a genus named *Metasequoia*, dating back to the Mesozoic Era (250 to 65 million years ago). This genus had only recently been described by the Japanese paleobotanist Shigero Miki, from fossils that were roughly five million years old.

ABOVE: Lower trunk of a large dawn redwood near the creek in Rhododendron Glen. Planted in the late 1940s and mid-1950s, the redwoods by the creek have all grown over 100 feet tall. (Photo by Niall Dunne)

OPPOSITE: Dawn redwood grows more slowly in drier, more exposed sites. This tree, planted 30 years ago near the playground in the Pinetum has only reached about 25 feet tall. (Photo by Niall Dunne)

in our collection is a product of that original seed donation.

The story of the dawn redwood is a testament to the vital role played by arboreta and botanical gardens in fostering the knowledge and preservation of the world's plants and trees. It is also a testament to the dedication of a multi-national group of scientists who persevered in identifying and saving this species.

The discovery rocked the botanical world. Here was a tree believed to be long extinct quietly surviving in a unique and remote pocket of the world. Miki had determined that his fossil specimens of *Metasequoia* were most closely aligned with the North American redwoods—*Sequoia sempervirens*, the California redwood, and *Sequoiadendron giganteum*, the giant sequoia. (The genus name *Metasequoia* derives from the Greek word meta, meaning "after," and *Sequoia*.) Cheng and Hu chose the species name of "glyptostroboides" for the large tree species discovered in Sichuan, in recognition of its resemblance to the Chinese swamp cypress, *Glyptostrobus pensilis*—a common deciduous conifer in southern China, and also the plant for which Wang mistook it.

Conserving an Endangered Tree

Cheng and Hu shared their discovery with then Arnold Arboretum director Edwin Drew Merrill and Ralph W. Chaney, a redwood specialist at the University of California, Berkeley. Both Americans arranged modest grants allowing the Chinese botanists to send their assistant on a more comprehensive expedition to find more trees and gather seeds. The Arnold distributed seeds from that trip to 76 botanical gardens and research stations throughout the globe. Washington Park Arboretum was among the recipients, and one of the 11 dawn redwoods

To the local Chinese, the tree was known as "water fir." They revered and protected the oldest trees and planted saplings in desired locations, but they also cut down many more trees for personal use. At the time of its discovery by the scientific community, the native population of *Metasequoia glyptostroboides* was found to be dwindling. American and Chinese scientists immediately began efforts to encourage protection of the largest, oldest specimens. Today, the tree is cultivated throughout much of the temperate northern hemisphere, and several cultivars have been named. However, the wild population—numbering in the region of 5400 trees—remains endangered, and conservationists are calling for more effective preservation of the habitat conditions around veteran trees to promote natural regeneration.

The climate in the remote Sichuan valley, where the dawn redwood trees were discovered, is unique in that it is a mild temperate one with cool, wet, but rarely freezing winters and summers with ample rainfall. Associated deciduous broadleaf trees in the old native forests included birch, chestnut, oak, beech and katsura trees. Young dawn redwoods are shade tolerant and gain height at an astounding rate.

Cultivating Metasequoia

Wild trees sprout in the dampest soils near creeks and seeps. In the late 1940s and mid 1950s,

ABOVE: The feathery foliage of dawn redwood. (Photo by Niall Dunne)

OPPOSITE: Fall color on a dawn redwood in Montsouris Park, in Paris. Note the narrow, pyramidal form. (Photo courtesy Zbigniew Galus, Wikimedia Commons)

Arboretum director Brian Mulligan selected similar conditions for our trees when he placed them slightly upslope from the creek running through Rhododendron Glen, and also along Arboretum Creek. In cultivation, *Metasequoia* has proved adaptable to a range of soil and temperature conditions, but they grow more slowly and to smaller dimensions in drier and/or cooler conditions. This is evident in size of the specimens planted more recently at the Arboretum in drier, exposed sections of the Pinetum.

Dawn redwood is well adapted to the Pacific Northwest and has the capacity to grow to 100 feet in 50 years and reach 30 feet after just 10 years. It has a narrow, pyramidal form for most of its life and does not become as broad at the base as the giant sequoia. The light-green foliage has a soft and ferny texture. Short needles sit opposite each other along the twigs. Fall color is cinnamon brown to golden. The broad buttresses that form on the lower trunk, deep-cinnamon-colored bark, and deep furrows that develop at old branch nodes give the tree a bold, sculptural appearance. Even though dawn redwood grows very rapidly when young, it is long-lived—a rare characteristic among fast-growing trees.

Ralph Chaney coined the common name for the plant. He suggested "dawn" as a colorful reference to the plant's prehistoric origins. This venerable redwood, with its ability to survive over the millennia and its adaptability to a variety of cultural conditions, is truly a tree for this century. In the 1940s, Chinese scientists traveled arduous roads to discover—and then preserve—the tree. Visitors to Washington Park Arboretum can travel a not so arduous trail to the small, shady valley of Rhododendron Glen to see a group of 100-foot tall *Metasequoia glyptostroboides* thriving near the creek. ~

Christina Pfeiffer is a horticulture consultant, ISA Certified Arborist and educator. She is a member of the "Bulletin" Editorial Board and served as the Arboretum Horticulturist from 1987 to 2002. Each quarter, she teaches a half-day "Arboretum Plant Study: Plant ID and Culture" lecture/field class through the UW Botanic Gardens ProHort programs.

Remembering Jan Pirzio-Biroli

September 3, 1926—June 15, 2015

Jan Pirzio-Biroli was editor of the "Bulletin" from 1964 to 1980. A brilliant plantswoman, she was dedicated to the Arboretum and to sharing her passion for plants with others. Originally an art historian, Jan visited the Arboretum in the 1950s to learn about what to grow in her Mercer Island garden and developed a keen interest in plant study. This led to a long career as an active Arboretum Foundation member and a UW Arboretum staff position until her retirement. "My Green Garden" (2004) was the last of her many articles for the "Bulletin."

Our Changing Climate, Part 1:

Reducing Your Garden's Climate Footprint

By Niall Dunne

It's been a banner year for heat in the Northwest! And it's been a particularly tough summer for many plants, from the not-drought-tolerant-enough shrubs and perennials in our gardens to the forest trees burning in the Paradise fire at Olympic National Park. Though human-induced climate change may not have caused our unusual warm weather (NOAA has linked it to a persistent and seemingly natural expanse of warm water in the Northeast Pacific, nicknamed "the blob"), climatologists are warning that this year's heat is a taste of what's to come.

What is predicted for the Northwest? By the end of this century, our average annual temperature will increase by three to 10 degrees Fahrenheit, depending on future greenhouse gas (GHG) emissions. Summers will be hotter and drier, leading to increased forest fire risk, drought stress in plants, and attacks by plant pests. Winters will be warmer and wetter, and winter precipitation will fall more as rain than snow, reducing snow pack and summer stream flow, and impacting forest communities, salmon habitat and water supply. Winter storms will be stronger, causing more flooding, stream erosion, landslides and windstorm damage. Other bad stuff is predicted, too. For instance, rising temperatures will increase air pollution in urban areas, directly impacting human health.

To reduce the severity of climate change, we need to make dramatic alterations to the way we live our lives—from our consumption of energy to the way we farm our food. Gardeners can significantly reduce their GHG footprints by employing a number of basic practices of sustainable horticulture. The good news is that many of these practices—such as planting more trees—will also make our homes and neighborhoods healthier and more beautiful.

Reduce Fossil Fuel Consumption

Burning of fossil fuels such as oil and coal releases carbon dioxide into the atmosphere,

ABOVE: Big leaf maple (*Acer macrophyllum*) in a Seattle neighborhood. Deciduous shade trees help reduce energy use by cooling homes in summer and letting sun warm them in winter. (Photo by wedgewoodinseattlehistory.com)

where it traps solar radiation and warms the planet (the so-called "greenhouse effect"). Reducing the consumption of fossil fuels—such as by increasing energy efficiency—is a key strategy for combating climate change. Here are some key ways to reduce energy consumption around your home and garden.

Use shade plants to cool your home in summer. According to the EPA, strategic planting of trees and shrubs can save you up to 40 percent on your energy bill. Growing trees on the south, west, and east sides of your house will help shade it from the hot summer sun. Growing tall, large-leaf deciduous trees, such as maples, works best because they provide a high-spreading canopy but also lose their foliage in fall and allow warming winter sunlight to hit your home. Set trees close enough to your home to cast shade but far enough away (about 15 feet) to avoid foundation damage from roots.

Use conifers to deflect cold winter winds. If you live in an area that's bombarded by cold winter winds, you can plant a windbreak composed of coniferous trees and shrubs to reduce the chill. Windbreaks are most effective when planted at a distance from your home (about two to five times the distance of the mature height of the tree), but even on small urban lots, a dense hedge of conifers planted several feet from your home, perpendicular to the prevailing wind, can help keep it warmer and reduce energy use.

Use green roofs for insulation and cooling. Vegetation on your roof is not only good for reducing stormwater runoff, it also adds an extra layer of insulation, helping bring down winter heating costs. In summer, a green roof can provide a cooling effect through evapotranspiration.

Cut back on or eliminate the use of power tools. Gasoline-powered gardening equipment such as lawnmowers and leaf blowers release carbon dioxide and emit high levels of carbon monoxide and other air pollutants. Switching to electric-powered equipment is more sustainable, but using old-fashioned push mowers, rakes, and other tools cuts out the carbon and also provides you with some healthful exercise.

Choose natural products over synthetics. The manufacturing of synthetic fertilizers and pesticides is highly energy intensive. Avoiding the latter also results in a more wildlife-friendly garden. Natural fertilizers and other products generally are safer and have less embodied energy, but you should avoid natural products that require mining (e.g. perlite in soil mixes) or other unsustainable practices.

Reduce irrigation. Water scarcity in the Northwest may be a seasonal phenomenon, but conserving water always makes good environmental sense. That's because the business of treating and pumping water has a large carbon footprint. Plant drought-tolerant plants in your garden, use more efficient irrigation systems, and irrigate at night or early in the morning to reduce water loss through evaporation.

Grow low-maintenance plants and reduce your lawn. Grow tough, well-adapted natives and non-invasive exotics, and your garden will require fewer inputs. Reduce the size of your lawn or replace turfgrass altogether with less-needy plants. If you can't let go of your lawn, make sure to leave your clippings when you mow (with your push mower!) to reduce the need for supplemental nutrients.

Plant a diverse garden. A diverse mix of plants creates a healthier, more resilient garden ecosystem that's less susceptible to pest outbreaks.

Minimize hardscape and use recycled materials. Construction materials such as rocks, concrete, and lumber come with a heavy carbon

Climate Change and Seattle City Light

Seattle boasts one of the greenest electrical utilities in the country because it uses hydroelectric resources for 90 percent of the power it provides. However, climate change presents a challenge to these green credentials, as reduced snow pack and melt-off will impact Seattle City Light's ability to generate the electricity it needs to serve its customers in summer.

burden—so limit their use and grow more plants instead. Use recycled materials whenever possible. Avoid cement, which requires very high heat to produce. If in doubt, choose wood, which generally requires less energy to produce than other common construction materials.

Avoid potting mixes. These are typically loaded with synthetic fertilizer and peat moss, which is an unrenewable resource harvested from critical carbon sinks in Canada. Use homemade or locally produced compost instead.

Purchase locally grown plants. Plants shipped in from out of state have a higher carbon footprint.

Grow your own food, organically. Gardeners who grow their own grub cut down on the energy required to transport, store and package food. Use organic methods, including campanion planting to help reduce the need to manage pests and weeds. Permaculture gardens maximize diversity and productivity and also focus on perennials, which require fewer inputs.

Cut Back on Methane and Other GHGs

Gardeners need to be aware of other powerful greenhouse gases, besides carbon dioxide, that they may be emitting in their everyday practices—particularly nitrous oxide and methane.

Avoid fast-release nitrogen fertilizers. Excessive amounts of nitrogen in the soil—whether from synthetic fertilizer or fast-release natural fertilizer, such as fish emulsion—can lead to emissions of nitrous oxide, a greenhouse gas that is more than 300 times as powerful as carbon dioxide at trapping heat. The use of slow-release organic amendments, such as compost, should supply adequate nutrients for most garden situations.

Manage your compost pile. Wet, low-oxygen conditions in your compost pile favor anaerobic bacteria that release nitrous oxide and methane, another powerful GHG, which has 21 times the heat-trapping potential of carbon dioxide. Simple management practices such as regularly turning your pile and shredding your organic material before adding it to the pile will help minimize these emissions.

Practice composting. Composting diverts huge amounts of organic material from landfills, where it would otherwise decompose under anaerobic conditions and release methane into the atmosphere. If you live in Seattle and would rather not compost, the City's public utility will do it for you—and recycle your kitchen and garden waste into black gold.

Capture Carbon in Plants and Soil

In addition to reducing the amount of carbon you emit into the atmosphere, you can help the planet by storing, or sequestering, carbon dioxide in the tissues of your plants and the organic matter of your soil (which is about 58 percent carbon). Biotic carbon sinks such as forests and soils are temporary—the carbon eventually decomposes and returns to the atmosphere. But they are nonetheless very significant.

For instance, soil contains almost twice as much carbon as Earth's entire atmosphere and all its aboveground living organisms combined. A third of this carbon is bound up in carbonate minerals, such as calcium carbonate, but two-thirds is tied up in organic matter, which includes the living fauna of the soil food web, decomposing plant and animal matter, and

ABOVE: Compost is a dark, crumbly, humus-like substance produced when organic materials are are piled together and allowed to decompose. Although 50 to 70 percent of the carbon in compost raw materials is lost as carbon dioxide during decomposition, compost is nonetheless a rich source of relatively stable carbon, and using it is an easy way to sequester carbon in soil.

OPPOSITE: The UW Farm teaches students the importance of sustainable agriculture and growing your food locally. The farm supplies organic food to campus restaurants and is also a place for students to engage in volunteerism and conduct field research. (Photo by Sarah Geurkink)

humus—the dark, spongy end product of decomposition and the cornerstone of good soil structure and fertility. Humus is quite resistant to microbial decay; some humic substances can last in soils for hundreds of years. Mean residence time of humus in cultivated soils is lower, and usually measured in years and decades.

Avoid disturbing soil. Tilling or digging planting beds erodes soil, harms beneficial soil organisms, and exposes stored carbon to the soil surface, where it is rapidly oxidized (combined with oxygen) by microbes and vented into the air as carbon dioxide. Don't disturb your soil any more than is necessary for planting.

Practice no-till vegetable gardening. Retire the rototiller, and instead use mulch layers to control weeds, prepare planting beds, prevent erosion, conserve water, and feed soil organisms.

Use compost to rebuild and retain historical levels of organic matter. It's estimated that plow-based agriculture depleted organic matter in temperate climate soils by as much as 60 percent. Test your soil to see how much organic matter it contains, and to find out its natural carrying capacity. Use a compost mulch to restore organic matter levels, and continue to add mulch each year in order to replenish the portion of the carbon supply that's naturally cycled back into the atmosphere.

Ensure an adequate supply of nutrients in the soil. Humus formation is more efficient when adequate nitrogen, phosphorus and sulfur are present. A fertile soil is also more productive, resulting in more plant residue entering the soil carbon pool. Avoid over-fertilizing with nitrogen, as this not only releases nitrous oxide but also stimulates loss of carbon from soil.

Plant more trees. Plants fix carbon from the atmosphere in their tissues through the process of photosynthesis. Carbon—in the form of simple sugars and polymers such as cellulose—comprises, on average, about half of a plant's dry matter. Plant species vary in their ability to accumulate and store carbon, but because of their relatively large size and long lives, trees are the champions of biotic carbon sequestration. Planting trees in your garden will help offset some of the carbon dioxide you produce each year.

Protect and plant large, long-lived trees. Large, long-lived trees with dense wood sequester more carbon over their lifetimes than smaller, rapid-growing trees. In one California study, a common hackberry (*Celtis occidentalis*) sequestered five tons of carbon over its 100-year lifespan, whereas a crape myrtle (*Lagerstroemia indica*) only managed to store 1/8 ton of carbon dioxide over its 30-year lifespan. (Note: the average North American generates 20 tons of carbon dioxide per year, so tree planting is just one tool, among many, for mitigating your climate impacts.)

Mimic the vertical layers of a forest. This technique will help you pack in as many plants—and store as much carbon—as possible. Diversity also increases resilience against disease, which will extend the storage life of your garden.

Provide trees with enough room to reach maturity. That goes for above and below ground. And grow a mix of plants of different ages to ensure continuous carbon storage over time.

Part 2 of this article will focus on adapting your garden to the coming changes in our climate.

Sources:

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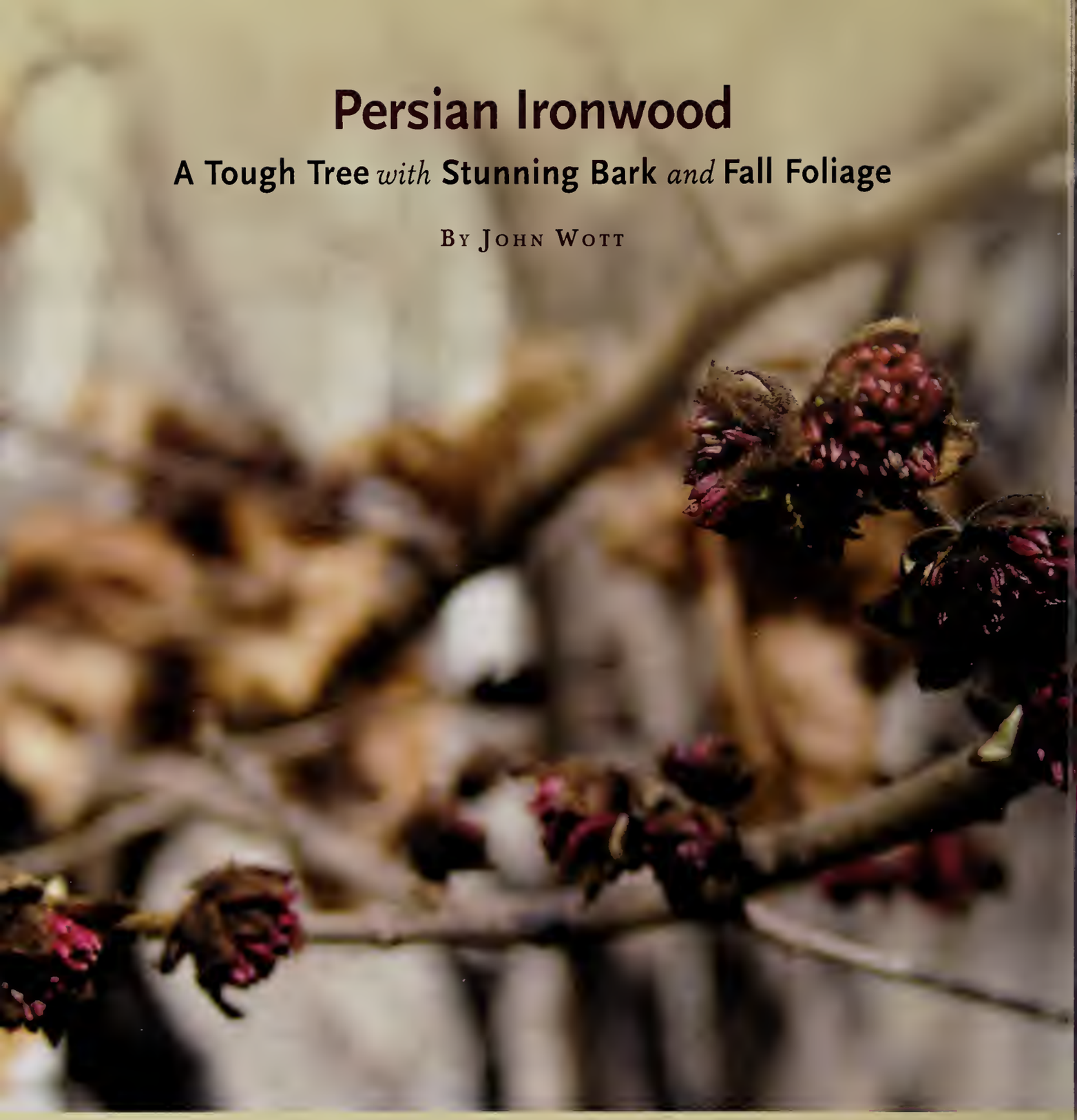
"The Conscientious Gardener," by Sarah Reichard. University of California Press, 2011.

Niall Dunne is the editor of the "Bulletin."

Persian Ironwood

A Tough Tree *with* Stunning Bark *and* Fall Foliage

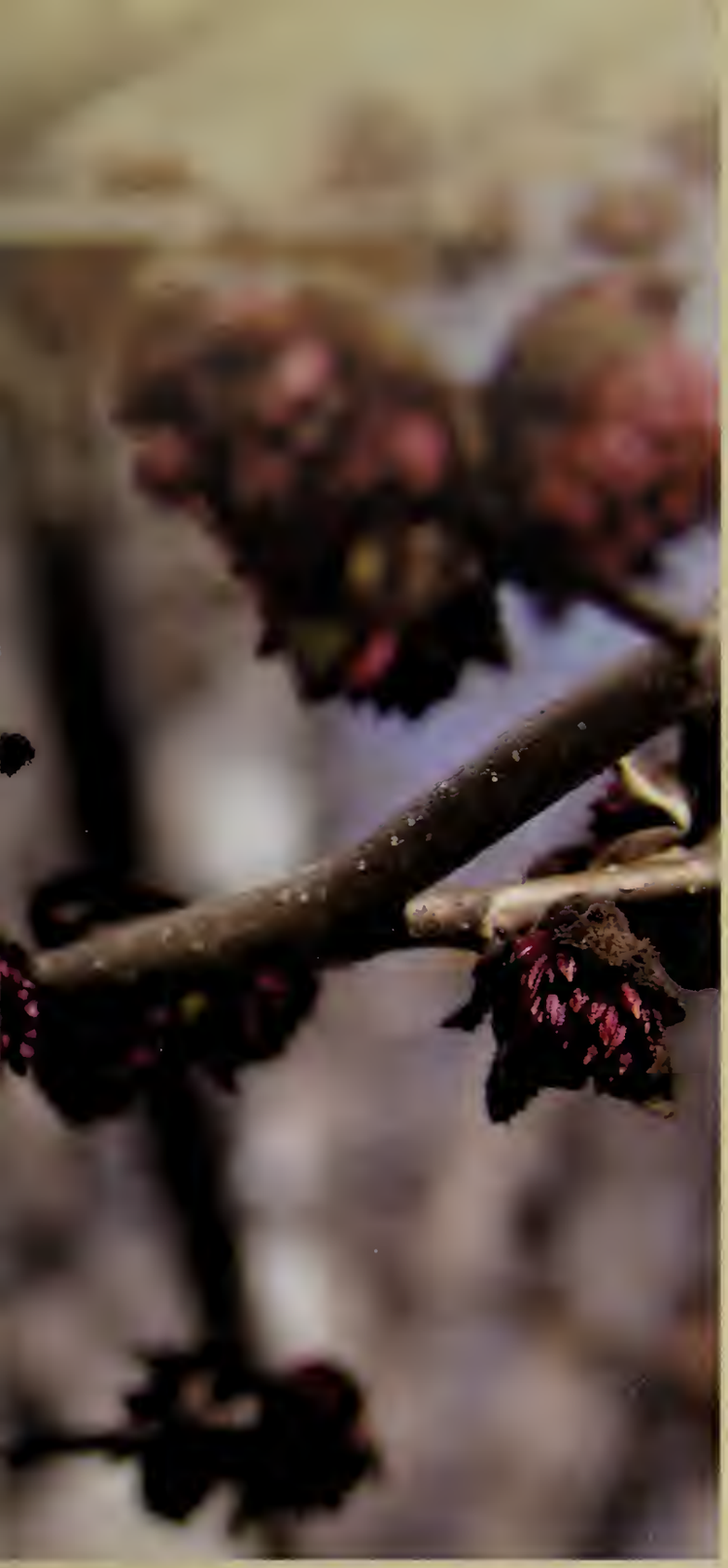
By John Wott



The Persian ironwood or iron-tree, *Parrotia persica*, is rarely seen in Northwest gardens, and yet it combines a number of very desirable traits, including adaptability and a fabulous fall foliage display. A member of the Hamamelidaceae or witch hazel family, the plant wasn't named—as you might think—for the colorful birds we sometimes keep as pets. It was named for Friedrich W. Parrot, a German naturalist, traveler and professor of medicine, best known for being the first explorer in modern times to climb Mount Ararat, in 1829.

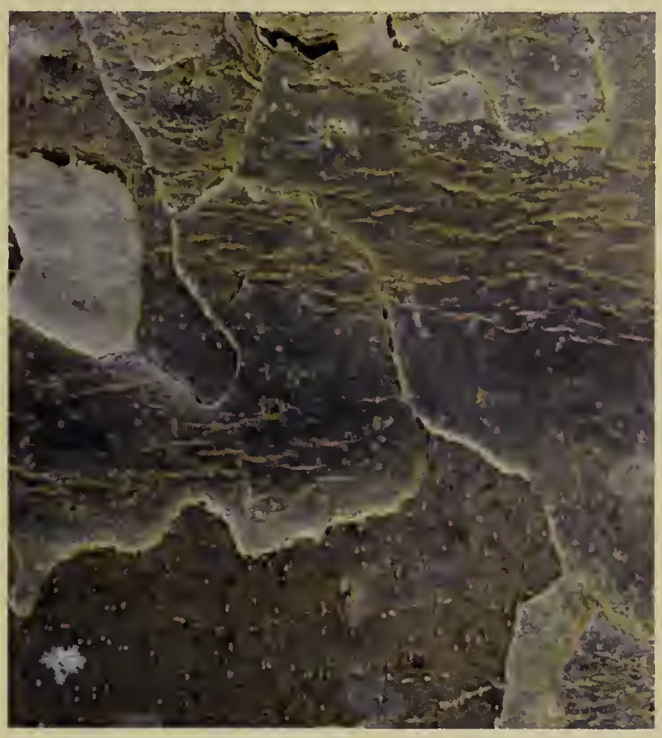
Native to the forest region south and southwest of the Caspian Sea, the Persian ironwood is a deciduous, slow-growing, often multi-stemmed large shrub or small tree reaching up to 40 feet tall. It becomes increasingly distinguished with age. On mature plants, the smooth, grey bark exfoliates to show green, white or

ABOVE: The rich-red, early spring flowers of Persian ironwood. (Photo courtesy the Scott Arboretum)



ABOVE: The plant's colorful fall color. (Photo courtesy Lynk Media/Wikimedia Commons)

BELOW: Persian ironwood's handsome bark gives it all-season appeal. (Photo by Niall Dunne)



tan patches beneath, much like a plane tree. Moreover, as the plant ages, the branches start to spread horizontally and seem to overarch and crisscross. As Brian Mulligan wrote in his 1995 curatorial notes about the specimens in Washington Park Arboretum, "...very interesting bark with arching branches."

Beautiful, dense clusters of coral-pink to rich-red flowers arrive well before leaf emergence in late winter to early spring. The flowers bear a close resemblance to those of their witch-hazel cousins. There are no petals, only the colorful stamens surrounded by brownish bracts.

The plant's alternate, oval to oblong, strongly veined leaves are sometimes tinged red on new growth. In summer, the leaves are dark green. In autumn, the color show continues, with the foliage turning a richly colored crimson, yellow and orange. Some gardeners feel ironwood has the best fall color!

Persian ironwood is ideal as a specimen tree, but it should be given adequate space and planted where its domed shape can be best

An Arboretum specimen showing the ironwood's arching branch form. (Photo by Joy Spurr)

appreciated. Placement is also important for appreciating the floral display: The plant's red haze of color is particularly stunning in the sunshine.

The tree tolerates either sun or partial shade. It likes a well-drained, loamy soil—preferably on the acid side; however, it seems to do well in more neutral soils, too. It even seems to tolerate harsher urban sites.

Persian ironwood usually requires little or no pruning. However, if you are going to choose one for a specimen, then it's best to have it trained up on a six-feet-or-so-high standard stem. This will give it a great shape as it matures.

It is relatively easy to propagate by seed, but it needs to go through a period of cool, moist storage. Germination is slow, sometimes taking up to 18 months. It also responds easily to softwood cuttings, taken just as the flush of spring growth is hardening. Use a rooting hormone and mist.

The tree has a relatively long history of cultivation in the West. It was first introduced into Kew Gardens from Saint Petersburg, Russia, in 1841. A number of those early collections still thrive in England. Kew has even selected a weeping form of the species, 'Pendula', which it says adds graceful weeping branches to the plant's already considerable charms.

Washington Park Arboretum has two specimens, both acquired in 1947 and located in the circle turnaround adjacent to the New Zealand Garden, Grid 7-5E. The older tree is one of three originally purchased from W.B. Clarke and Company, San Jose, California. It was planted out into the Arboretum on March 24, 1950. (Sadly, the other two succumbed to "drought.") The younger specimen was purchased from Mrs. Else Frye, on September 13, 1947 and planted three days later.

Two newer specimens were planted into the Soest Garden at the Center for Urban Horticulture in 1998 but eventually had to be removed due to their large size. Persian ironwood is a very garden-worthy plant, but it needs the right spot to truly strut its stuff.

John A. Wott is the director emeritus of Washington Park Arboretum and a member of the "Bulletin" Editorial Board.

A Second Species Discovered

For many years, there was only one known species in the genus *Parrotia*, i.e. the Persian ironwood, *P. persica*. Then in 1960, a plant explorer found a "subspecies" in Eastern China, about 2500 miles away from the native range of *P. persica* in Iran and the Caucausus. Soon after, it was thought to have gone extinct. But the plant was rediscovered in 1988. In 1992, it was classified as *Parrotia subaequalis*, and it now also goes by the common name of Chinese ironwood. It's very similar in growth habit and appearance to its Persian cousin. We are eagerly awaiting this new acquisition, as well as younger Persian ironwoods for our collections.

Lower Rainier Vista

Completing a Historic Olmsted Vision

By Phil Wood

Close by the Washington Park Arboretum, a new project combines the historic vista of Mount Rainier from the University of Washington campus with contemporary landscape design. The Lower Rainier Vista project was completed and opened to the public in July, 2015. The design, by the internationally known Seattle firm Gustafson Guthrie Nichol, creates a physical and visual connection that completes Rainier Vista.

The Olmsted Brothers, whose firm also laid out key components of the Arboretum, conceived Rainier Vista as the central axis of the 1909 Alaska Yukon Pacific Exposition, a world's fair held on the then largely undeveloped campus of the University of Washington. The view along the vista from Red Square to Drumheller Fountain and on to Mount Rainier—called by UW Department of Architecture Professor Emeritus Grant Hildebrand one of the most important views in the state of Washington—creates the "fountain-to-mountain" experience that's unique to the UW campus.

However, a small strip of road towards the end of the Vista, Northeast Pacific Place, carved through the sight line and broke the flow of the promenade. It also cut off a piece of land—the Montlake Triangle—from the campus. A 2008 master plan by Michael Van Valkenburgh Associates proposed improving the campus connection by lowering Northwest Pacific Place under ground level and creating a land bridge over it. Accommodating foot traffic from the new link light rail station was an added consideration.

Gustafson Guthrie Nichol developed the design further. "The project is about setting up a fitting, campus-quality bone structure for the place within an intersection of

ABOVE: A view of Mount Rainier looking down the new Lower Rainier Vista. (Photo courtesy Gustafson Guthrie Nichol)

many transportation modes," says Founding Principal Shannon Nichol. "The project utilizes a rediscovered corner of the UW campus to complete the historic Vista monument, while serving the intersecting people arriving or passing through the busy place on foot, via light rail and buses, on bicycles or in cars."

Taking its cue from the master plan, the design reconnects the Montlake Triangle by lowering NE Pacific Place and the adjacent Burke Gilman Trail—and by extending the Rainier Vista axis with an elegant, inward-curving land bridge. For the curves of the bridge, Gustafson Guthrie Nichol borrowed the pointed Gothic arch motif of collegiate architecture and doubled it to give the bridge a narrow waistline. The span is both economic and aesthetic, while having the added benefit of casting less shadow on the roadway below.

One intention of the new design was to enhance the view through careful grading of the land form. The designers strategically placed horizons at key Mount Rainier viewing points along the Vista to obscure the traffic along Montlake Boulevard NE and NE Pacific Street below. New areas of level lawn were created along the Vista to function as "front porches" to the University. These new spaces will host a variety of activities, from impromptu Frisbee games to formal commencement ceremonies.

Gustafson Guthrie Nichol has a lot of experience designing high-use landscapes in complex urban contexts. The firm was the recipient of the Smithsonian's Cooper Hewitt National Design Award for Landscape Architecture in 2011. Recent and current work includes the National Museum of African American History and Culture, CityCenterDC, the Bill and Melinda Gates Foundation Campus, and Seattle's Pike/Pine Renaissance Street Plan.

Also involved in the project design were structural and civil engineers from KPFF Consulting Engineers, working under the direction of the University of Washington and project partners Sound Transit and the Washington State Department of Transportation. Project

ABOVE TOP: The inward-curving land bridge over the lowered Burke Gilman Trail and NE Pacific Place. (Photo courtesy Gustafson Guthrie Nichol)

ABOVE BOTTOM: Rendering of the Vista showing what the Montlake Triangle will look like with a mature canopy of big-leaf maples and red oaks. (Image courtesy Gustafson Guthrie Nichol)

OPPOSITE: Understory plants on the new Vista include many natives, such as longleaf Oregon grape and coast strawberry.

complications included a site laced with regional sewer lines and university campus utilities, doing construction over an existing underground garage, protecting heritage trees, and maintaining a busy electric trolley system.

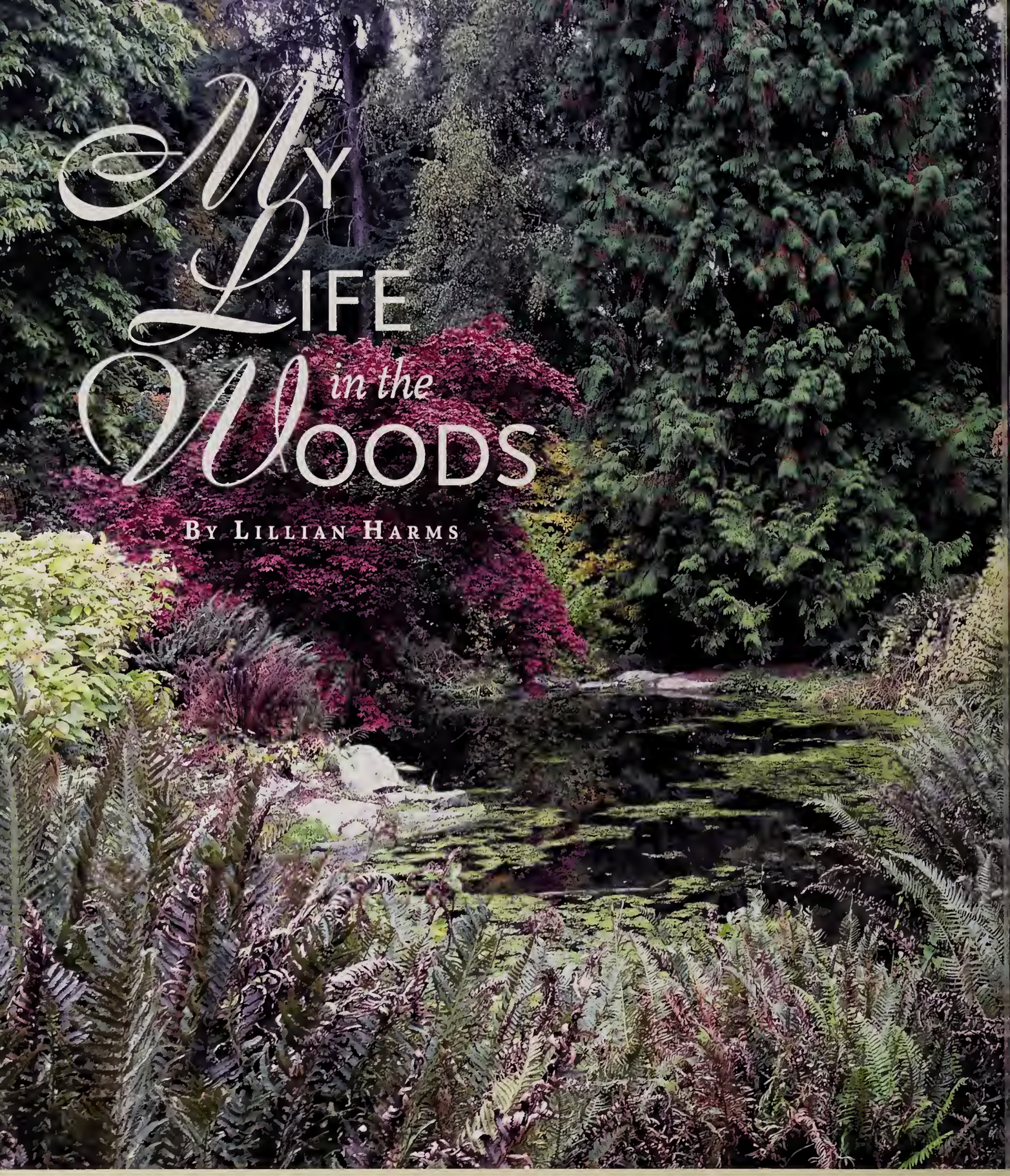
Walking down the Vista from Drumheller Fountain, paths run on each side of deep-green grass bordered by even darker-green conifers. The paths curve together to cross NE Pacific Place, then curve apart again to enter Montlake Triangle. Here, the long, narrow promenade of lawn and trees opens up to larger park space with a central lawn surrounded by planting beds filled with sapling trees, young shrubs, groundcovers and ornamental grasses. Pathways connect pedestrians and cyclists to the University Medical Center complex on the right and Husky Stadium on the left—two important symbols of the University—while straight ahead lies Mount Rainier. Another path on the Triangle leads to a new walk/bike bridge spanning Montlake Boulevard and connects everything to the upcoming UW Station.

The designers intend that as the newly planted trees on either side of the Vista mature, the beloved wooded character of the campus will spill out to the Montlake Triangle. Because this area is on top of a parking garage, the trees had to be carefully sited in areas that would provide enough soil volume for good growth.

The trees, all natives, include Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), and bigleaf maple (*Acer macrophyllum*). Nichol observes that bigleaf maple is our only native true-shade tree and will grow quickly to establish a canopy. Its high branches, as they touch, will repeat the Gothic arch pattern. The conifers will grow more slowly but eventually bring in the native-forest feeling. Most of the shrubs and ground covers are also native plants. They include longleaf Oregon grape (*Berberis nervosa*), nootka rose (*Rosa nutkana*), evergreen huckleberry (*Vaccinium ovatum* 'Thunderbird'), coast strawberry (*Fragaria chiloensis*), and Oregon stonecrop (*Sedum oreganum*).

Standing on the Montlake Triangle at the end of the Vista, the scene has a sense of movement: bicycles and joggers on the Burke Gilman, traffic buzzing all around the triangle, and pedestrians and bikers going to and from the campus and hospital—soon to be joined by Sound Transit commuters. Looking back up the Vista, the white geyser of Drumheller Fountain shines brightly. The Lower Rainier Vista project brilliantly celebrates and expands the historic vision.

Phil Wood is the owner of a residential landscape design and installment company (www.philwoodgardens.com) and serves on the Editorial Board of the "Bulletin."

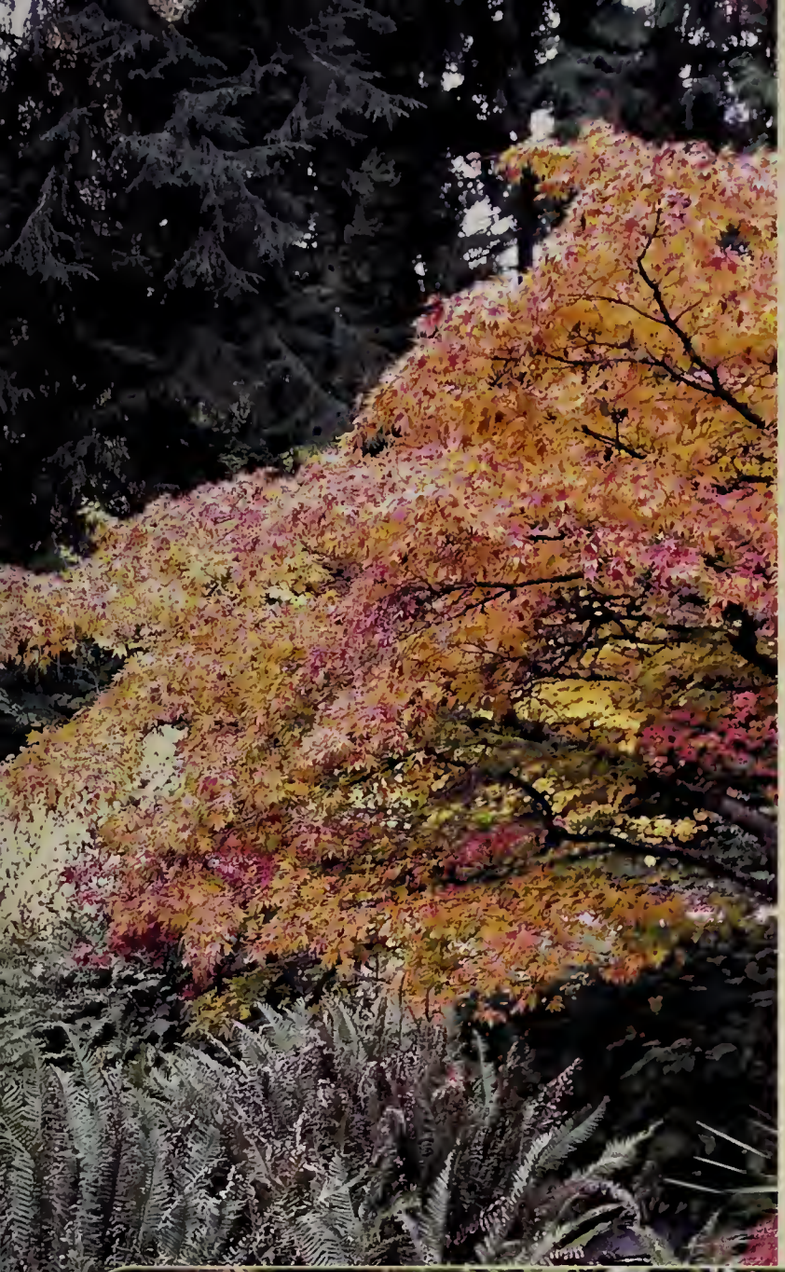


My Life in the Woods

By Lillian Harms

When I was three years old, I was left in the woods of Washington Park Arboretum by my parents. I took this in stride and became something of a hermit, living underneath a large western red cedar tree. I learned about the properties of cedar bark, how soft but strong it is, and about which grasses were the best to make into clothing. I learned by trial and error, and after almost a year, had a fully formed daily routine.

I would wake up in the morning and wash up in a pond before the ducks got there. Next, I'd go looking for breakfast. I would eat berries and, if it was warm enough, would harvest and drink



OPPOSITE: The tree in the Woodland Garden under which Lillian "lived."

BELOW: Lillian at age three.

the nectar of flowers. Then, I would explore and climb until I was hungry again and needed to look for more berries. After lunch, I would work on the project I would always have going, such as making a sleeping bag out of moss or harvesting fruits and other edible things from nearby foliage. There were always many things to do after I got my day's work done, so there was never a dull moment. I could explore to my heart's content, take a nap on a bed of moss or some sunny grass, or watch birds. I could look at frogs in the ponds or try to see fish. After strolling around the park enjoying myself for most of the afternoon, I would enjoy a dinner of healthy grasses and, once more, berries. Then I would go back to the tree that I lived under, and get onto my bed of moss, under my grass blankets. When I laid my head on the grass, it felt just like an actual bed.

And so I continued my routine, insulating everything with moss and abandoning the flower nectar in the winter, when one day something

disrupted my incredibly peaceful lifestyle. A couple walked along past my tree, and they noticed me. They stopped to ask if I was okay, and where my parents were, and I told them my story. They were incredulous, but once I told them the details and assured them that I was not lying, they believed me. They asked me many more questions and then made a decision. They offered to adopt me—to take me to live with them. I accepted their generous offer, and they led me to their car.

I had no idea what a car was, and I said "What's that?" They answered me and explained how a car worked. I found out that their names were Priscilla and David, and I introduced myself. On the ride, I looked out the window and saw all these unfamiliar things flashing by. I had never seen a building bigger than the Arboretum gift shop, so the restaurants and shops were alien to me. All the other shiny cars of all colors flashing by seemed like a beautiful dream. When we got back to their house, I didn't know what anything was. I asked "What's this?" or "What is that called?" about everything from the refrigerator to the toilet. I was amazed by everything. The carpet was so soft, the running water was so warm, the whole house seemed so luxurious.

They led me up the stairs to my new room, and said they would have to get it ready for me. David said they needed to clean it up because the girl that was living there right now (me) was so messy. I giggled and gave him a reproachful look, and then I went to play in my room, not for a moment considering cleaning it.

For a while, every time I would go to the Arboretum, I would run under a tree and pretend to wake up, and the game would begin again. To this day, I love to spend time in the Arboretum with my family. My mom, Priscilla, frequently takes my grandparents, and it was my grandmother who inspired me to write this story.

Lillian Harms is 11 years of age and most likely the youngest contributor ever to the "Bulletin." Her story is based on a fantasy she had when she was three years old and began to come on regular visits to the Arboretum. She dreamed that she lived alone as a wild child in the Arboretum until her parents found her. Discussions about and reenactments of the story lasted for almost four years. Lillian's grandmother, a member of Foundation, suggested Lillian write the story down and submit it to the "Bulletin" for publication.

Lillian in the Arboretum this past spring, aged 11.

Q&A from the
Miller Library's Plant Answer Line

The Fruiting Cycle of Figs

By Rebecca Alexander

This regular column features Q&A selected and adapted from the Elisabeth C. Miller Library's Plant Answer Line program. If you'd like to ask a plant or gardening question of your own, please call (206) 897-5268 (UW Plant), send it via the library website (www.millerlibrary.org), or email directly to hortlib@uw.edu.

QUESTION: It's November, and my fig tree still has hundreds of hard, green figs. Will they be the ones to ripen next spring? Will they fall off? The tree is three years old, and we got ripe figs in the summer before these all set—and some last summer too.

ANSWER: There ought to be a simple answer to your worthwhile question, but according to Ben Pike's "The Fruit Tree Handbook" (Green Books, 2011), "It is very easy to become confused by the fruiting cycle of figs, because they carry different generations of fruit on the tree all at the same time. In the British climate [similar to Pacific Northwest], once the ripe fruits have been picked, there will be two types of fruit left on the tree. The larger ones, from about marble size upwards, are fruits produced this season that will not ripen properly. The fruits that will ripen next year are now the size of a pea or even smaller. They can be seen mostly on the final 20 to 30 centimeters (8 to 12 inches) of shoots that

Newly opening leaf buds of a common fig, with a breba fruit on the tip of the shoot. (Photo by Etienne/Wikimedia Commons)

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have grown this year. The larger fruits are likely to split or fall off during the winter.

"Removing all the fruits larger than a pea in November allows the tree to put its energy into developing small fruits ready for next season. In other words, the fruits need to develop over two seasons in our climate. It is the fruits that would normally develop and ripen over one season in a warmer climate that are removed in order to help the embryonic fruits develop by the following year."

There is similar information in "Grow Figs Where You Think You Can't," by Steven Biggs

Types of Fig

In his book, "Grow Figs Where You Think You Can't," Steven Biggs divides figs into four types:

Caprifigs: These produce small inedible figs whose pollen is needed for pollination and development of Smyrna and San Pedro figs.

Smyrna figs: It takes a wasp (*Blastophaga*) with caprifig pollen to pollinate these figs; in the absence of pollination, the immature figs will drop. *Blastophaga* wasps aren't found in cold climates, so Smyrna figs are not the type to choose in those areas.

San Pedro figs: The breba crop will grow without pollination, but the main crop requires caprifig pollen. Some growers will be satisfied with growing this type of fig solely for the breba (summer) crop.

Common figs: These are the best choice for cold-climate gardeners because they do not require wasp pollination in order to develop fruit.

According to Washington State University Extension / Skagit County Master Gardeners ("Ask the Master Gardener," August 6, 2006, accessed on the web 1/3/2015), suitable fig varieties for our area are 'Brown Turkey' (this one is listed as a favorite by Biggs in his book), 'Desert King', 'Italian Honey', 'Osborn Prolific', 'Peter's Honey', 'Violette de Bordeaux' and 'White Genoa'.

RIGHT: A 'Brown Turkey' fig split in half. A variety of the common fig, *Ficus carica*, 'Brown Turkey' is highly recommended for our region. (Photo courtesy Shadle/Wikimedia Commons)

(No Guff Press, 2012). Here is an excerpt from the book (which is also available online):

"It will break your heart...but there will be figs that don't ripen. As you tuck in your trees for the winter, remove any remaining figs that are bigger than the size of a pea."

You will sometimes see references to the breba crop and the main crop. Breba is an alteration of the Old Spanish word *bebra*, meaning twice-bearing. In terms of your fig, the breba crop is the first crop that ripens on last season's wood (the ones that are tiny right now). Steven Biggs says that the breba crop ripens as early as July in his climate (Ontario), and the main crop (figs that form on new growth) ripens in September or October, or sometimes not at all, depending on the weather. While some fig aficionados say the breba crop is inferior, Biggs cherishes it because it may be the only one to ripen in a short-summer climate.

Not all varieties of fig produce a prolific breba crop; some produce only the main crop. The web page of California Rare Fruit Growers (www.crfg.org) lists varieties and the extent of their breba crops. ~

Rebecca Alexander is the Plant Answer Line librarian at the Miller Library, located in the UW Botanic Gardens' Center for Urban Horticulture (3501 NE 41st Street, Seattle).

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New Books *for* Pacific Northwest Gardeners

By Brian R. Thompson

Landscape Architect—Cornelia Hahn Oberlander

In the summer of 2013, I visited Vancouver, B.C. Across the street from my hotel was a wonderful urban space, Robson Square; I spent one morning of my precious two days exploring this plant-filled public plaza. On the same trip I visited the dazzling new visitor center at the VanDusen Botanical Gardens, with its gardens of native plants laid out in discrete ecosystems. Although these two projects had widely spaced completion dates (1983 and 2011), the landscape architect for both projects was Cornelia Oberlander, the subject of a new biography by Susan Herrington, "Cornelia Hahn Oberlander: Making the Modern Landscape."

Oberlander, in addition to being one of the premier landscape architects of our region, has lived a fascinating life. She and her family escaped Nazi Germany shortly before World War II; she was—in 1947—one of the first women to graduate from the Harvard Graduate School of Design; and she spent several years of her early career on projects in Philadelphia "...working directly with communities and incorporating their views into the design process."

Oberlander and her husband moved permanently to Vancouver in the late 1950s, when the city was "a tiny town." "I was able to conquer new ground," she writes. "In the east I would have never been able to do that." Oberlander also became a mother, and this perhaps led to a strong interest in the design of playgrounds, using her three children as subjects in her research on what design elements work from a child's perspective. One of her most famous projects was the outdoor play environment at Expo 67 in Montreal, which proved more popular than the more structured, indoor Children's Creative Centre it adjoined.

While these small-scale projects have been very successful, Oberlander is best known for her larger works, which include subjects in a wide range of settings and climate zones, such as the Museum of Anthropology at the University of British Columbia (1976 and 1997), the Legislative Assembly Building in Yellowknife, Northwest Territories (1994), and the courtyard of the New York Times building (2007).

Landscape Architect—Richard Haag

Early in her career, Oberlander spent one summer as an apprentice with landscape architect Dan Kiley at his practice in New England. There she met a fellow apprentice Richard Haag, who later also found his way to the Pacific Northwest and is the subject of "The Landscape Architecture of Richard Haag," a new biography by Thaïsa Way.

Haag's life story had even more twists and turns than Oberlander's before he arrived in the Pacific Northwest. Growing up on a family nursery and farm near Louisville, Kentucky, he studied and was mentored on both coasts and in the Midwest, but it was a two-year visit to Japan—as one of the first recipients of a Fulbright scholarship to visit that country—that he later claimed "changed my whole life." There, he learned "conservation and economy... [and] working with what you have."

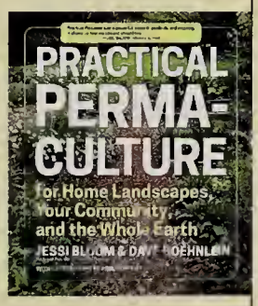
Haag came to Seattle in 1958 to develop what became the Landscape Architecture Department at the University of Washington. Haag taught one of the core courses, "Theory and Perception," from 1959 to 1996, "using it to articulate his vision of landscape architecture as a melding of the

humanities, the arts, and the sciences, a means of stewardship of the earth and its cultures."

He continued his private practice as well, and it is from this that he earned his greatest fame today, primarily through two projects. The first, Gas Works Park, was the result of a nearly 20-year public debate. Haag's ability as a designer is almost overshadowed by his ability as a political operator. His techniques for transforming a highly toxic site into a safe place for the public—all with the minimum of soil removal—were also remarkable. He certainly mastered "working with what you have."

The story of his work at the Bloedel Reserve is not quite as unqualified a success. Some of his designs, most notably the Garden of Planes, were later removed. Other plans were altered, despite the notable accolades they received. A common thread throughout both books is the challenges Oberlander and Haag faced to be honored in their professions, and—since both are now in their 90s—to see their projects live on as they intended.

Practical Permaculture

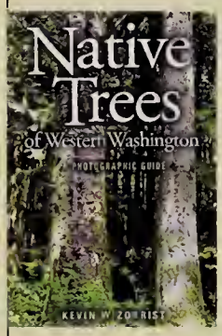


What is permaculture? The authors of "Practical Permaculture," Jessi Bloom and David Boehnlein, go to considerable effort to define the evolving meaning of this term, while emphasizing the agricultural and ethical principles on which proponents mostly agree. The most important of these principles are caring for the earth and caring for people.

The introduction continues with the basics of nature and how the earth "works," and then the principles of design—using co-author Jessi Bloom's house as a case study. After that, a wide range of topics are considered, and permaculture options for a variety of climate zones are discussed—all illustrating how working with our environment instead of against it has proved successful in many different settings and among many different peoples.

The book goes far beyond gardening to consider energy sources and their alternatives, the design and construction of homes, even the processing of human waste—essentially a handbook to all physical aspects of life, including our social structures. Near the end is a list of 50 plants that they consider useful for permaculture landscapes. The list was not what I expected; many of the plants were unfamiliar, especially those that will only thrive or, in some cases, survive in a tropical climate.

Does this all work? This certainly is a book for generating ideas. I would want to vet the list of the recommended plants carefully. Will they survive? Might they become invasive? If nothing else, this book will make you realize there's much to consider in all of your gardening decisions.



Two Field Guides to Regional Trees

"Native Trees of Western Washington" is accurately described in the subtitle as "A Photographic Guide" to trees that can be found west of the Cascade Crest. Each entry has several photos and includes close-ups of all the parts you will need to help with identification.

The author, Kevin Zobrist, is an associate professor of Extension Forestry for Washington State University but grew up and is based in Western Washington, and also is a Husky by schooling. He leads the WSU extension program in Forestry for the counties of the northern Puget Sound.

While the forestry background is evident in his descriptions of habitats and growth characteristics, his descriptions are well-rounded and engaging. An example is his interest in the production of syrup from bigleaf maples (*Acer macrophyllum*): "...it produces an exceptional syrup that has rich maple flavor with hints of vanilla and can hold its own against anything the Northeast has to offer."

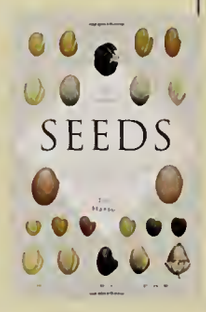
If your exploration of native trees takes you on a trip farther afield, consider bringing "Conifers of the Pacific Slope," by Michael Edward Kauffmann. Inspired as a youth by a family visit to the forests of California, this Virginia native

returned to work among the majestic trees that stirred his younger self. This field guide is a product of that passion and is designed for easy packing.

The scope is all of the native conifer species of the Pacific Coast, from northern Baja California to well into British Columbia, and eastward to the Rockies. This includes some very impressive trees. In addition to the familiar Pacific Northwest conifers highlighted in the previous book, there are the many cypresses, junipers and pines of California plus representatives from a few other genera, including the most impressive of them all, the coast redwood (*Sequoia sempervirens*) and giant sequoia (*Sequoiadendron giganteum*).

While intended as a field guide, the author provides lots of interesting bits of natural history with his descriptions and presents some wonderful maps that group related species together and, even show areas where hybridization occurs. These, along with essays at the front and back, make this a book easily readable from cover to cover.

Seeds



Thor Hanson's son Noah became fascinated with seeds at an early age. After reading "The Triumph of Seeds," I can say I'm not surprised: Having a father who can tell such compelling stories would cause the commonplace to imprint on almost any child.

Adults will find Hanson's stories equally engaging. He is an excellent researcher, interweaving the importance of seeds in botany, ecology and natural history with their significance in both human history and what you are serving for dinner. Why are the seeds of chili peppers hot? What's in it for the coffee bean to be full of caffeine?

These questions have chapter-long answers that introduce a wealth of characters, ranging from Christopher Columbus to Johann Sebastian Bach to a barista in Ballard. Through both history and modern culture, the relationships between humans and plants (and animals) are very deep, ongoing and ever developing.

As his son ages, Hanson involves him in his experiments, but the end results are often about more than just the research. Describing the flight of the seed of a Javan cucumber, with its six-inch wing, he recalls, "We watched that seed fly for the simple joy of seeing something beautiful doing what it is meant to do. Standing there together, heads tilted skyward, we laughed and laughed until it disappeared from view—a papery wisp at the edge of visions, still rising."

Local Birds in Poetry and Sumi-e

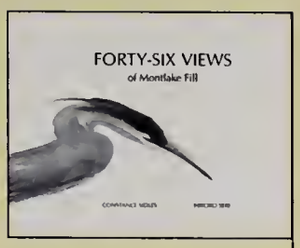
The three books by Constance Sidles about her experiences with birding in the Montlake Fill (also known as the Union Bay Natural Area) have

Landscaping for Play

The Jim Everett Memorial Park on the University of British Columbia campus is one of Cornelia Hahn Oberlander's more recent projects (2002). Intended for the children of students living in nearby university housing, it presented some significant challenges: Liability issues surrounding playgrounds have tightened in recent years, and there were already several demands on the space for junior soccer, festivals, and providing pleasing views from the resident's apartments.

Oberlander relied on creative use of landscaping features—berms, sunken ovals and small mounds—and limited hardscape, mostly seating areas for the parents, to create the play space. There is no playground equipment. In the planning phase, one member of the public declared a "playground without a swing-set, slides, and teeter-totters is un-Canadian!" This same parent, observing her children happily at play in the completed park, commented to Oberlander that this was "not so much a Canadian playground as a human one."

been among the most circulated titles from the Miller Library. All are filled with her careful observations of the life in this urban wetland and her philosophical observations of broader life. In "Forty-Six Views of Montlake Fill," she takes a different linguistic approach: poetry.



The poems are distilled observations of this ecosystem throughout the seasons. Hiroko Seki, an accomplished artist of sumi-e, the Japanese style of ink wash or literati painting, has created paintings to accompany each poem, making for a simple but profound combination.

> *"In the pond,*
> *A female Cinnamon Teal paddles with her babies,*
> *Mother ship followed by seven little tugboats,*
> *Fueled with green algae."*

Brian R. Thompson is the manager and curator of the Elisabeth C. Miller Library of the University of Washington Botanic Gardens. He is also a member of the "Bulletin" Editorial Board.

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